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# PATENT ABSTRACTS OF JAPAN

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(21)Application number : 08-319431 (71)Applicant : NEC HOME ELECTRON LTD

(22)Date of filing : 29.11.1996 (72)Inventor : MURAMOTO HIDETO  
YUSA MASAACKI

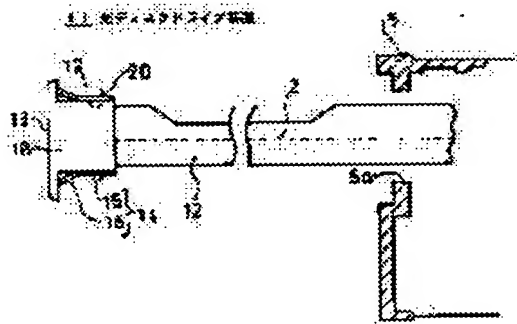
## (54) OPTICAL DISK DRIVE DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an optical disk drive device with a high dustproof effect and a simple configuration.

SOLUTION: A front surface plate 13 with a size for covering a tray withdrawal port 5a, a holder part 18 that projects on the rear surface of the front surface plate 13, and a dustproof material 14, where a flat part 16 is engaged to the holder part 18 while leaving a deflection deformation margin, and the flap part 16 is included between the open edge part of the tray withdrawal port 5a and the rear surface of the front surface plate 13 in a disk drive device for preventing dust/dirt from entering an enclosure 5, are provided at a loading tray 12 that reciprocates between a disk-mounting device and a disk-driving device via the tray withdrawal port 5a inside and outside the enclosure 5 for accommodating the drive

mechanism 3 of an optical disk 2. The maintenance of rustproof performance and the drive mechanism for the loading tray 12 and the load suppression for the power supply can be managed simultaneously.



## PRIOR ART

[Description of the Prior Art] Revolution actuation of the optical disk was carried out,

and the frontloading method with which the optical disk drive equipment which performs record or playback by the optical pickup arranged the loading device in the front section of an equipment housing which holds a drive device occupies most. By this kind of front loading tray method, a loading tray is taken in and out of the front face of a housing through the tray outlet which carries out opening, and an optical disk can be conveyed now between the disk stowed position besides a housing, and the disk activation point in a housing. The perspective view in which drawing 5 shows an example of conventional optical disk drive equipment, and drawing 6 are the important section side elevations of the optical disk drive equipment shown in drawing 5.

[0003] The optical disk drive equipment 1 shown in drawing 5 carries out revolution actuation of the optical disk 2 which is a record medium according to the drive device 3, it considers as the configuration which minds an optical pickup 4, and records or reproduces a signal, and the body is held in the flat box-like housing 5. Tray outlet 5a for the loading tray 6 which conveys an optical disk 2 between a disk stowed position and a disk activation point is carrying out opening to housing 5 front face. A loading tray 6 consists of base plate 6a, side-face plate 6b of the couple really formed in the both sides of base plate 6a, and front plate 6c really formed in the front end of base plate 6a. The disk receipt crevice of a major diameter is engraved on base plate 6a more slightly than the outer diameter of an optical disk 2, an optical disk 2 is laid and restricted support is carried out. Loading devices (not shown), such as a pinion rack device in which a loading tray 6 is conveyed within and without housing 5, are attached to side-face plate 6b. Front plate 6c serves to cover tray outlet 5a and to prevent trespass of dust while preventing the elutriation of the optical disk 2 from base plate 6a. It is an advice way for radial to scan [ an optical pickup 4 ] 6d. The optical disk 2 guided to the disk activation point in a housing 5 is pinched between chucking pulley 3a attached to the turntable in which rise-and-fall actuation is carried out by the elevator style (not shown) in one with an optical pickup 4, and clamper plate 3b which counters this, and revolution actuation is carried out with a turntable.

[0004] By the way, as the protection-against-dust material 7 which consists of a spring material is fixed in the tooth back of front plate 6c prepared at loading tray 6 head and it was shown in drawing 6, when it engages with the engagement slot 8 where this protection-against-dust material 7 surrounds opening of tray outlet 5a of a housing 5 and a loading tray 6 is in a disk activation point, it prevents that dust invades in a housing 5 from the clearance between tray outlet 5a. That is, if it is in the condition that the loading tray 6 was held in the housing 5 interior, between housing 5 front face and front plate 6c is blockaded by the protection-against-dust material 7, and the airtightness of a housing 5 is maintained.

## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates the easy protection-against-dust material of structure to the optical disk drive equipment which raised installation and protection-against-dust nature at the loading tray of an optical disk.

[0002]

[Description of the Prior Art] Revolution actuation of the optical disk was carried out, and the frontloading method with which the optical disk drive equipment which performs record or playback by the optical pickup arranged the loading device in the front section of an equipment housing which holds a drive device occupies most. By this kind of front loading tray method, a loading tray is taken in and out of the front face of a housing through the tray outlet which carries out opening, and an optical disk can be conveyed now between the disk stowed position besides a housing, and the disk activation point in a housing. The perspective view in which drawing 5 shows an example of conventional optical disk drive equipment, and drawing 6 are the important section side elevations of the optical disk drive equipment shown in drawing 5.

[0003] The optical disk drive equipment 1 shown in drawing 5 carries out revolution actuation of the optical disk 2 which is a record medium according to the drive device 3, it considers as the configuration which minds an optical pickup 4, and records or reproduces a signal, and the body is held in the flat box-like housing 5. Tray outlet 5a for the loading tray 6 which conveys an optical disk 2 between a disk stowed position and a disk activation point is carrying out opening to housing 5 front face. A loading tray 6 consists of base plate 6a, side-face plate 6b of the couple really formed in the both sides of base plate 6a, and front plate 6c really formed in the front end of base plate 6a. The disk receipt crevice of a major diameter is engraved on base plate 6a more slightly than the outer diameter of an optical disk 2, an optical disk 2 is laid and restricted support is carried out. Loading devices (not shown), such as a pinion rack device in which a loading tray 6 is conveyed within and without housing 5, are attached to side-face plate 6b. Front plate 6c serves to cover tray outlet 5a and to prevent trespass of dust while preventing the elutriation of the optical disk 2 from base plate 6a. It is an advice way for radial to scan [ an optical pickup 4 ] 6d. The optical disk 2 guided to the disk activation point in a housing 5 is pinched between chucking pulley 3a attached to the turntable in which rise-and-fall actuation is carried out by the elevator style (not shown) in one with an optical pickup 4, and clasper

plate 3b which counters this, and revolution actuation is carried out with a turntable.

[0004] By the way, as the protection-against-dust material 7 which consists of a spring material is fixed in the tooth back of front plate 6c prepared at loading tray 6 head and it was shown in drawing 6 , when it engages with the engagement slot 8 where this protection-against-dust material 7 surrounds opening of tray outlet 5a of a housing 5 and a loading tray 6 is in a disk activation point, it prevents that dust invades in a housing 5 from the clearance between tray outlet 5a. That is, if it is in the condition that the loading tray 6 was held in the housing 5 interior, between housing 5 front face and front plate 6c is blockaded by the protection-against-dust material 7, and the airtightness of a housing 5 is maintained.

[0005]

[Problem(s) to be Solved by the Invention] Since the above-mentioned conventional optical disk drive equipment 1 was sticking the protection-against-dust material 7 on the tooth-back part of front plate 6c of a loading tray 6, When the gap has been made according to the installation tolerance of a loading tray 6 between the protection-against-dust material 7 and the engagement slot 8 In the condition of sufficient protection-against-dust effectiveness not being acquired, and the low DIGU tray 6 being in the housing 5 interior, and carrying out revolution actuation of the optical disk 2 The technical problem that an excessive load was exerted on a sake to a loading device occurred that energizing a loading tray 6 must be continued to a housing 5 back side for airtight maintenance. Furthermore, since the protection-against-dust material 7 was stuck on the tooth-back periphery section of front plate 6c with a slight attachment area with the double-sided tape, it was what holds the technical problem that the working capacity at the time of installation is very bad.

[0006] This invention solves the above-mentioned technical problem, and installation of protection-against-dust material is easy, and it aims at offering the optical disk drive equipment which can moreover obtain the high protection-against-dust engine performance.

[0007]

[Means for Solving the Problem] The drive device in which this invention carries out revolution actuation of the optical disk, and an optical pickup performs record or playback in order to solve the above-mentioned technical problem, The housing in which holds this drive device and a tray outlet carries out opening to a front face, In optical disk drive equipment equipped with the loading tray which held said inside and outside of a housing free [ reciprocation ] between the disk stowed position and the disk activation point through said tray outlet Said loading tray said tray outlet The front plate of wrap magnitude, A part bends, and leave deformation allowances to the

holder section which protruded on the tooth back of this front plate, and this holder section, and it is fitted in them. It is characterized by providing the protection-against-dust material which said part intervenes in said disk activation point between the opening edge of said tray outlet, and the tooth back of said front plate, and prevents trespass of the dust into said housing.

[0008] Moreover, it is characterized by for the wedge-shaped engagement projection protruding on two or more places, for said protection-against-dust member extending further from that the engagement hole with which said protection-against-dust material engages with said engagement projection, and achieves positioning and an omission stop is drilled in two or more places, the tube-like object which fits loosely into said tray outlet, and this tube-like object, and said holder section possessing said flap section which becomes a part etc.

[0009]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained with reference to drawing 1 thru/or drawing 5 . The decomposition perspective view showing the modification of the protection-against-dust material part which showed the decomposition perspective view of the protection-against-dust material part which showed the important section side elevation in which drawing 1 shows 1 operation gestalt of the optical disk drive equipment of this invention, and drawing 2 to drawing 1 , and drawing 3 to drawing 2 , and drawing 4 are the important section perspective views showing the modification of protection-against-dust material.

[0010] The optical disk drive equipment 11 shown in drawing 1 improves the structure of the protection-against-dust material 14 arranged in the tooth back of the front plate 13 attached in the front face of a loading tray 12, and it elaborates the tooth-back configuration of the front plate 13 so that the protection-against-dust material 14 of a parenthesis can equip easily. The protection-against-dust material 14 really casts flexible sheets, such as chlorination plastic sheeting, and a polyester film sheet or a rubber sheet, to box-like, and as shown in drawing 2 , it consists of the rectangular-head tubed duct section 15 in which a transverse plane and a tooth back carry out opening, and the flap section 16 of four sheets prolonged from the duct section 15. vertical side-face of two sheets 15b short to level side-face 15a and length of two sheets with the oblong duct section 15 -- having -- \*\*\*\* -- level side-face 15a -- near at the right end of the left -- respectively -- the engagement hole 17 -- moreover -- vertical side-face 15b -- the -- the engagement hole 17 is mostly drilled in the center.

[0011] On the other hand, the rectangular-head tubed holder section 18 to which the duct section 15 of the protection-against-dust material 14 is fixed by extrapolation

fitting has protruded on the tooth back of the front plate 13. This holder section 18 is what was really formed in the front plate 13 by molding, it has protruded and, as for the direction of the wedge of the engagement projection 20, the wedge-shaped engagement projection 20 has turned [ tongue-shaped piece / 19 / which is rich in the elasticity formed near / corner / each / of four corners ] to the direction of a tooth back of the front plate 13.

[0012] When attaching the protection-against-dust material 14, the right pair of the transverse-plane opening of the duct section 15 of the protection-against-dust material 14 is first carried out to a part for opening of the holder section 18, and the duct section 15 is stuffed into the holder section 18 with a position as it is. To a total of six engagement holes 17, the duct section 15 is pushed in until the engagement projection 20 of the holder section 18 is engaged altogether. When all engagement projections 20 let a wedge-shaped slideway slide and finish engaging with the engagement hole 17, the protection-against-dust material 14 is firmly fixed to the tooth back of the front plate 13. Moreover, the flap section 16 of four sheets prolonged from the duct section 15 at this time confronts each other through the space which a head is stopped by the tooth back of the front plate 13, and bends and serves as allowances with each field of the holder section 18, with flexibility maintained.

[0013] In this way, when fitting immobilization of the protection-against-dust material 14 is carried out at the tooth back of the front plate 13 and conveyance actuation of the loading tray 12 is carried out from a disk stowed position to a disk activation point. In conveyance termination, the flap section 16 intervenes between the opening edge of tray outlet 5a, and the tooth back of the front plate 13, and between the opening edge of tray outlet 5a and the tooth backs of the front plate 13 is airtightly closed because the flap section 16 bends and deforms. The resiliency accompanying bending deformation of the flap section 16 is very small, therefore the force in which you make it discharge a loading tray 12 from a disk activation point hardly needs to energize a loading device in the actuation condition always in order for there to be nothing, therefore to hold a loading tray 12 to a disk activation point.

[0014] According to the above-mentioned optical disk drive equipment 11, thus, the inside and outside of a housing 5 which held the drive device 3 of an optical disk 2. To the loading tray 12 which reciprocates between a disk stowed position and a disk activation point through tray outlet 5a, tray outlet 5a. The front plate 13 of wrap magnitude, The flap section 16 bends, and leave deformation allowances to the holder section 18 which protruded on the tooth back of the front plate 13, and the holder section 18, and it is fitted in them. Since the protection-against-dust material 14 which the flap section 16 intervenes in a disk activation point between the opening edge of tray outlet 5a and the tooth back of the front plate 13, and prevents trespass of the dust

into a housing 5 was prepared and constituted When a loading tray 12 is in a disk activation point, a part of protection-against-dust material 14 which carried out fitting wearing bends and deforms into the holder section 18 of front plate 13 tooth back, and are close to the opening edge of tray outlet 5a of housing 5 front face. Trespass of the dust from the outside can be prevented and the load control to maintenance of the protection-against-dust engine performance, the drive for a loading tray 12, or its source of power can be reconciled. Since it is fixed only by it being unnecessary to energize the low DIGU tray 12 to the midst which is carrying out revolution actuation of the optical disk 2 at a housing 5 back side, and to maintain airtightness, and fitting the protection-against-dust material 14 in front plate 13 tooth back, Installation is dramatically easy and the attachment activity with the bad efficiency of sticking the protection-against-dust material 7 on the tooth-back periphery section of front plate 6c with a small attachment area using a double-sided tape like before is unnecessary. And a protection-against-dust function can be achieved firmly, without being influenced by the constraint on the structure of the front plate 13, the installation tolerance of a loading tray, etc.

[0015] Moreover, since the engagement hole 17 which protrudes the wedge-shaped engagement projection 20 on two or more places, engages with the engagement projection 20 at the protection-against-dust material 14, and achieves positioning and an omission stop in the holder section 18 was drilled in two or more places While being able to make the holder section 18 and the protection-against-dust material 14 fitted in this coalesce after it positioned and escaped and the stop has been carried out to the engagement projection 20 by engagement of the engagement hole 17, and this assembling and aiming at large improvement in the workability at the time The repeat of receipts and payments of a loading tray 12 and the omission of the protection-against-dust material 14 which originate in violent handling etc. somewhat can be prevented certainly.

[0016] Furthermore, since the protection-against-dust material 14 extends from the duct section 15 which fits loosely into tray outlet 5a, and the duct section 15 and possesses said flap section 16 which becomes a part, The protection-against-dust material 14 really formed by molding from flexible sheets, such as chlorination plastic sheeting, and a polyester film sheet or a rubber sheet, etc. is used. The dustproof structure which harnessed the flexibility of the flap section 16 in the hermetic-seal part enough can be made, the superfluous burden to the drive of a loading tray 12 can be mitigated, and the good protection-against-dust engine performance can be demonstrated.

[0017] In addition, although the tongue-shaped piece 19 in which elastic deformation is possible was formed in the holder section 18 which protruded on the tooth back of



the front plate 13 and the wedge-shaped engagement projection 20 was considered as the protruding configuration with the above-mentioned operation gestalt at this tongue-shaped piece 19, the wedge-shaped engagement projection 30 direct to each field of the rectangular-head tubed holder section 28 like the optical disk drive equipment 21 which shows an important section to drawing 3 may be made to protrude. Moreover, since the installation nature of protection-against-dust material is raised, like the protection-against-dust material 34 shown in drawing 4 , slitting 35a of the depth to about 1/3 can be formed in a part for the connection of each side face of the duct section 35, and it can also consider as the configuration to which the extension range of the flap section 36 at the time of installation is expanded.

[0018]

[Effect of the Invention] As explained above, according to this invention, the inside and outside of a housing which held the drive device of an optical disk To the loading tray which reciprocates between a disk stowed position and a disk activation point through a tray outlet, a tray outlet The front plate of wrap magnitude, A part bends, and leave deformation allowances to the holder section which protruded on the tooth back of a front plate, and the holder section, and it is fitted in them. a disk activation point -- setting -- this, when a loading tray is in a disk activation point since the part prepared and constituted the protection-against-dust material which intervenes between the opening edge of a tray outlet, and the tooth back of a front plate, and prevents trespass of the dust into a housing In order for a part of protection-against-dust material which carried out fitting wearing to bend and deform into the holder section on the tooth back of a front plate, to be close to the opening edge of the tray outlet of the front face of a housing and to prevent trespass of the dust from the outside, The load control to maintenance of the protection-against-dust engine performance, the drive for a loading tray, or its source of power can be reconciled. Since it is fixed only by it being unnecessary to energize a low DIGU tray at a housing back side to the midst which is carrying out revolution actuation of the optical disk, and to maintain airtightness, and fitting protection-against-dust material in a front plate tooth back, Installation is dramatically easy and the attachment activity with the bad efficiency of sticking protection-against-dust material on the tooth-back periphery section of a front plate with a small attachment area using a double-sided tape is unnecessary. And the effectiveness which was [ achieve / firmly / a protection-against-dust function ] excellent is done so, without being influenced by the constraint on the structure of a front plate, the installation tolerance of a loading tray, etc.

[0019] A wedge-shaped engagement projection is protruded on the holder section at two or more places. Moreover, to protection-against-dust material Since the

engagement hole which engages with an engagement projection and achieves positioning and an omission stop was drilled in two or more places While being able to make the holder section and the protection-against-dust material fitted in this coalesce after it positioned and escaped and the stop has been carried out to the engagement projection by engagement of an engagement hole, and this assembling and aiming at large improvement in the workability at the time The effectiveness of being able to prevent certainly the repeat of receipts and payments of a loading tray and the omission of protection-against-dust material which originate in violent handling etc. somewhat is done so.

[0020] Furthermore, since protection-against-dust material extends from the tube-like object which fits loosely into a tray outlet, and a tube-like object and possesses said flap section which becomes a part, The protection-against-dust material really formed by molding from flexible sheets, such as chlorination plastic sheeting, and a polyester film sheet or a rubber sheet, etc. is used. The dustproof structure which harnessed the flexibility of the flap section in the hermetic-seal part enough can be made, the superfluous burden to the drive of a loading tray is mitigated, and the effectiveness of being able to demonstrate the good protection-against-dust engine performance is done so.

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初審(訴願)引証附件

MENU SEARCH INDEX DETAIL JAPANESE

1 / 1

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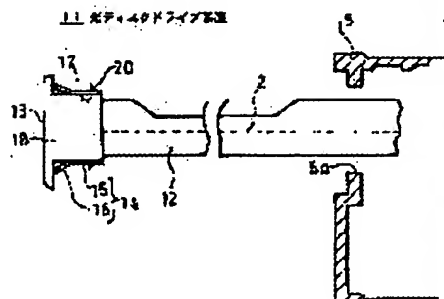
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## (57)Abstract:

PROBLEM TO BE SOLVED: To provide an optical disk drive device with a high dustproof effect and a simple configuration.

SOLUTION: A front surface plate 13 with a size for covering a tray withdrawal port 5a, a holder part 18 that projects on the rear surface of the front surface plate 13, and a dustproof material 14, where a flat part 16 is engaged to the holder part 18 while leaving a deflection deformation margin, and the flap part 16 is included between the open edge part of the tray withdrawal port 5a and the rear surface of the front surface plate 13 in a disk drive device for preventing dust/dirt from entering an enclosure 5, are provided at a loading tray 12 that reciprocates between a disk-mounting device and a disk-driving device via the tray withdrawal port 5a inside and outside the enclosure 5 for accommodating the drive mechanism 3 of an optical disk 2. The maintenance of rustproof performance and the drive mechanism for the loading tray 12 and the load suppression for the power supply can be managed simultaneously.



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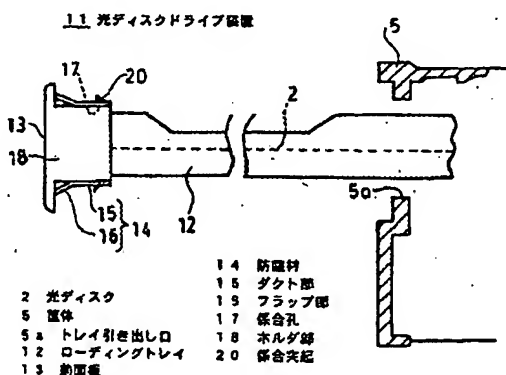
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内

(54) 【発明の名称】 光ディスクドライブ装置

(57) 【要約】

【課題】 防塵効果が高く、かつ構成が簡単な光ディスクドライブ装置を提供する。

【解決手段】 光ディスク2のドライブ機構3を収容した筐体5の内外を、トレイ引き出し口5aを介してディスク装着位置とディスク駆動位置との間で往復動作するローディングトレイ12に、トレイ引き出し口5aを覆う大きさの前面板13と、前面板13の背面に突設したホルダ部18と、ホルダ部18にフラップ部16が組み変形余裕を残して嵌装され、ディスク駆動位置においてフラップ部16がトレイ引き出し口5aの開口縁部と前面板13の背面との間に介在して筐体5内への塵埃の侵入を阻止する防塵材14を設けて構成してある。防塵性能の維持とローディングトレイ12のための駆動機構やその動力源に対する負荷抑制を、両立させることができる。



## 【特許請求の範囲】

【請求項1】 光ディスクを回転駆動し、光ピックアップにより記録又は再生を行うドライブ機構と、該ドライブ機構を収容し、前面にトレイ引き出し口が開く筐体と、前記トレイ引き出し口を介してディスク装着位置とディスク駆動位置との間で前記筐体内外を往復自在に保持したローディングトレイとを備えた光ディスクドライブ装置において、前記ローディングトレイは、前記トレイ引き出し口を覆う大きさの前面板と、該前面板の背面に突設したホルダ部と、該ホルダ部に一部分が組み

変形余裕を残して嵌装され、前記ディスク駆動位置において前記一部分が前記トレイ引き出し口の開口縁部と前記前面板の背面との間に介在して前記筐体内への塵埃の侵入を阻止する防塵材とを具備することを特徴とする光ディスクドライブ装置。

【請求項2】 前記ホルダ部は、楔状の係合突起が複数箇所に突設されており、前記防塵材は、前記係合突起に係合して位置決め及び抜け止めを果たす係合孔が複数箇所に穿設されていることを特徴とする請求項1記載の光ディスクドライブ装置。

【請求項3】 前記防塵材は、前記トレイ引き出し口に遊嵌する筒状体と、該筒状体から延出して前記一部分となるフラップ部とを具備することを特徴とする請求項1又は2記載の光ディスクドライブ装置。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、光ディスクのローディングトレイに構造の簡単な防塵材を取り付け、防塵性を高めた光ディスクドライブ装置に関する。

【0002】

【従来の技術】光ディスクを回転駆動し、光ピックアップにより記録又は再生を行う光ディスクドライブ装置は、ドライブ機構を収容する装置筐体の前面部にローディング機構を配設したフロントローディング方式が大半を占めている。この種のフロントローディング方式では、筐体前面に開口するトレイ引き出し口を介してローディングトレイを出し入れし、光ディスクを筐体外のディスク装着位置と筐体内のディスク駆動位置との間で搬送できるようになっている。図5は、従来の光ディスクドライブ装置の一例を示す斜視図、図6は、図5に示した光ディスクドライブ装置の要部側面図である。

【0003】図5に示した光ディスクドライブ装置1は、記録媒体である光ディスク2をドライブ機構3により回転駆動し、光ピックアップ4を介して信号を記録又は再生する構成とされており、その主要部は扁平な箱状の筐体5に収容されている。筐体5前面には、光ディスク2をディスク装着位置とディスク駆動位置との間で搬送するローディングトレイ6のためのトレイ引き出し口5aが開口している。ローディングトレイ6は、底面板6aと、底面板6aの両側に一体形成した一対の側面板

6bと、底面板6aの前端に一体形成した前面板6cとからなる。底面板6aには、光ディスク2の外径よりも僅かに大径のディスク収納凹部が突設されており、光ディスク2を載置されて拘束支持する。側面板6bには、ローディングトレイ6を筐体5内外に搬送するヒニオン・ラック機構等のローディング機構（図示せず）が組み付けてある。前面板6cは、底面板6aからの光ディスク2の飛び出しを防止するとともに、トレイ引き出し口5aを覆って塵埃の侵入を防ぐ働きをする。6dは、光ピックアップ4が半径方向の走査するための案内路である。筐体5内のディスク駆動位置まで案内された光ディスク2は、昇降機構（図示せず）により光ピックアップ4とともに一体的に昇降駆動されるターンテーブルに付属するチャッキングアーム3aとこれに対向するクランパプレート3bとの間に挟持され、ターンテーブルとともに回転駆動される。

【0004】ところで、ローディングトレイ6先端に設けた前面板6cの背面には、弾性材料からなる防塵材7が固着しており、図6に示したように、この防塵材7が筐体5のトレイ引き出し口5aの開口部を囲繞する係合溝8に係合し、ローディングトレイ6がディスク駆動位置にあるときにトレイ引き出し口5aの隙間から塵埃が筐体5内に侵入するのを阻止するようになっている。すなわち、ローディングトレイ6が筐体5内部に収容された状態にあっては、防塵材7によって筐体5前面と前面板6cとの間が閉塞され、筐体5の気密性が保たれる。

【0005】

【発明が解決しようとする課題】上記従来の光ディスクドライブ装置1は、防塵材7をローディングトレイ6の前面板6cの背面部分に貼着していたため、ローディングトレイ6の取り付け公差によって防塵材7と係合溝8との間に隙間ができてしまったときなどに、十分な防塵効果が得られないことがあり、またローディングトレイ6が筐体5内部にあって光ディスク2を回転駆動している状態において、気密性維持のためローディングトレイ6を筐体5奥側へ付勢し続けねばならないために、ローディング機構に対し余分な負荷を及ぼすといった課題があった。さらに、防塵材7は貼着面積の僅かな前面板6cの背面周縁部に両面テープによって貼着していたため、取り付け時の作業能率が非常に悪いといった課題を抱えるものであった。

【0006】本発明は、上記課題を解決したものであり、防塵材の取り付けが容易であり、しかも高い防塵性能を得ることのできる光ディスクドライブ装置を提供することを目的とするものである。

【0007】

【課題を解決するための手段】上記課題を解決するため、本発明は、光ディスクを回転駆動し、光ピックアップにより記録又は再生を行うドライブ機構と、該ドライブ機構を収容し、前面にトレイ引き出し口が開く筐

体と、前記トレイ引き出し口を介してディスク装着位置とディスク駆動位置との間で前記筐体内外を往復動自在に保持したローディングトレイとを備えた光ディスクドライブ装置において、前記ローディングトレイは、前記トレイ引き出し口を覆う大きさの前面板と、該前面板の背面に突設したホルダ部と、該ホルダ部に一部分が挟み変形余裕を残して嵌装され、前記ディスク駆動位置において前記一部分が前記トレイ引き出し口の開口縁部と前記前面板の背面との間に介在して前記筐体内への塵埃の侵入を阻止する防塵材とを具備することを特徴とするものである。

【0008】また、前記ホルダ部が、楔状の係合突起が複数箇所に突設されており、前記防塵材が、前記係合突起に係合して位置決め及び抜け止めを果たす係合孔が複数箇所に穿設されていること、さらには前記防塵材が、前記トレイ引き出し口に遊嵌する筒状体と、該筒状体から延出して前記一部分となるフラップ部とを具備すること等の特徴とするものである。

【0009】

【発明の実施の形態】以下、本発明の実施形態を図1ないし図5を参照して説明する。図1は本発明の光ディスクドライブ装置の一実施形態を示す要部側面図、図2は、図1に示した防塵材部分の分解斜視図、図3は、図2に示した防塵材部分の変形例を示す分解斜視図、図4は、防塵材の変形例を示す要部斜視図である。

【0010】図1に示す光ディスクドライブ装置11は、ローディングトレイ12の前面に取り付けた前面板13の背面に配設される防塵材14の構造を改良し、かつこの防塵材14が簡単に装着できるような前面板13の背面形状に工夫を凝らしたものである。防塵材14は、塩化ビニールシートやポリエステルフィルムシート或いはゴムシート等の可視性シートを箱状に一体成型したものであり、図2に示したように、正面と背面が開口する四角筒状のダクト部15と、ダクト部15から延びる4枚のフラップ部16とから構成される。ダクト部15は、横長の2枚の水平側面15aと縦に短い2枚の垂直側面15bを有しており、水平側面15aには左右端の近傍にそれぞれ係合孔17が、また垂直側面15bにはそのほぼ中央に係合孔17が穿設してある。

【0011】一方、前面板13の背面には、防塵材14のダクト部15が外挿嵌合により固定される四角筒状のホルダ部18が突設してある。このホルダ部18は、前面板13に一体成型により形成したもので、四隅の各隅部近傍に形成した弾性に富む舌片19に楔状の係合突起20が突設してあり、係合突起20の楔の方向は前面板13の背面方向を向いている。

【0012】防塵材14を取り付ける場合、まず防塵材14のダクト部15の正面開口部をホルダ部18の開口部分に正対させ、そのままの姿勢でダクト部15をホルダ部18に押し込む。ダクト部15は、計6個の係合孔

17に対し、ホルダ部18の係合突起20がすべて係合するまで押し込む。すべての係合突起20が、楔状の案内面を滑らせて係合孔17に係合し終えると、防塵材14は前面板13の背面にしっかりと固定される。また、このときにダクト部15から延びる4枚のフラップ部16は、可視性を保ったまま先端が前面板13の背面に係止され、ホルダ部18の各面とは挟み余裕となる空間を介して対峙する。

【0013】こうして、防塵材14は前面板13の背面に嵌合固定され、ローディングトレイ12をディスク装着位置からディスク駆動位置まで搬送駆動したときに、搬送終端においてフラップ部16がトレイ引き出し口5aの開口縁部と前面板13の背面との間に介在し、フラップ部16が挟み変形することで、トレイ引き出し口5aの開口縁部と前面板13の背面との間を気密に封止する。フラップ部16の挟み変形に伴う弾力力はごく小さなものであり、従ってローディングトレイ12をディスク駆動位置から排出させようとする力は殆どなく、従ってローディングトレイ12をディスク駆動位置に保持する目的でローディング機構を常時駆動状態に付勢する必要はない。

【0014】このように、上記光ディスクドライブ装置11によれば、光ディスク2のドライブ機構3を収容した筐体5の内外を、トレイ引き出し口5aを介してディスク装着位置とディスク駆動位置との間で往復動するローディングトレイ12に、トレイ引き出し口5aを覆う大きさの前面板13と、前面板13の背面に突設したホルダ部18と、ホルダ部18にフラップ部16が挟み変形余裕を残して嵌装され、ディスク駆動位置においてフラップ部16がトレイ引き出し口5aの開口縁部と前面板13の背面との間に介在して筐体5内への塵埃の侵入を阻止する防塵材14を設けて構成したから、ローディングトレイ12がディスク駆動位置にあるときに、前面板13背面のホルダ部18に嵌合装着した防塵材14の一部が挟み変形して筐体5前面のトレイ引き出し口5aの開口縁部に密接し、外部からの塵埃の侵入を阻止することができ、防塵性能の維持とローディングトレイ12のための駆動機構やその動力源に対する負荷抑制を両立させることができ、光ディスク2を回転駆動している最中にローディングトレイ12を筐体5奥側に付勢して気密性を維持するといったことは不要であり、また防塵材14は前面板13背面に嵌装するだけで固定されるため、取り付けが非常に簡単であり、従来のように貼着面積の小さな前面板6cの背面周縁部に両面テープを使って防塵材7を貼着するといった能率の悪い組み付け作業は不要であり、しかも前面板13の構造上の制約やローディングトレイの取り付け公差等に影響されることがなく、しっかりと防塵機能を果たすことができる。

【0015】また、ホルダ部18に、楔状の係合突起20を複数箇所に突設し、防塵材14に、係合突起20に

係合して位置決め及び抜け止めを果たす係合孔17を複数箇所に穿設したので、ホルダ部18とこれに嵌装される防塵材14とを、係合突起20と係合孔17の係合により位置決め及び抜け止めされた状態で合体させることができ、これにより組み立て時の作業性の大幅な向上を図るとともに、ローディングトレイ12の出し入れの繰り返しや多少乱暴な取り扱い等に起因する防塵材14の脱落を確実に防止することができる。

【0016】さらに、防塵材14が、トレイ引き出し口5aに遊嵌するダクト部15と、ダクト部15から延出して前記一部分となるフラップ部16とを具備するため、塩化ビニールシートやポリエステルフィルムシート或いはゴムシート等の可撓性シート等から一体成型により形成した防塵材14を用い、気密シール部分にフラップ部16の可撓性を十分活かした防塵構造を作り出すことができ、ローディングトレイ12の駆動機構に対する過剰な負担を軽減し、良好な防塵性能を発揮することができる。

【0017】なお、上記実施形態では、前面板13の背面に突設したホルダ部18に弾性変形可能な舌片19を形成し、この舌片19に楔状の係合突起20を突設する構成としたが、図3に要部を示す光ディスクドライブ装置21のごとく、四角筒状のホルダ部28の各面に直接楔状の係合突起30を突設するようにしてもよい。また、防塵材の取り付け性を高めるため、例えば図4に示した防塵材34のごとく、ダクト部35の各側面の接続部分に1/3程度までの深さの切り込み35aを形成し、取り付け時のフラップ部36の拡開範囲を拡大する構成とすることもできる。

【0018】

【発明の効果】以上説明したように、本発明によれば、光ディスクのドライブ機構を収容した筐体の内外を、トレイ引き出し口を介してディスク装着位置とディスク駆動位置との間で往復動作するローディングトレイに、トレイ引き出し口を覆う大きさの前面板と、前面板の背面に突設したホルダ部と、ホルダ部に一部分が摺り変形余裕を残して嵌装され、ディスク駆動位置において該一部分がトレイ引き出し口の開口縁部と前面板の背面との間に介在して筐体内への塵埃の侵入を阻止する防塵材を設けて構成したから、ローディングトレイがディスク駆動位置にあるときに、前面板背面のホルダ部に嵌合装着した防塵材の一部が摺り変形して筐体前面のトレイ引き出し口の開口縁部に密着し、外部からの塵埃の侵入を阻止するため、防塵性能の維持とローディングトレイのための駆動機構やその動力源に対する負荷抑制を両立させることができ、光ディスクを回転駆動している最中にローディングトレイを筐体奥側に付勢して気密性を維持するといったことは不要であり、また防塵材は前面板背面に嵌装するだけで固定されるため、取り付けが非常に簡単であり、貼着面積の小さな前面板の背面周縁部に両面テープ

を使って防塵材を貼着するといった能率の悪い組み付け作業は不要であり、しかも前面板の構造上の制約やローディングトレイの取り付け公差等に影響されることなく、しっかりと防塵機能を果たすることができる等の優れた効果を奏する。

【0019】また、ホルダ部に、楔状の係合突起を複数箇所に突設し、防塵材に、係合突起に係合して位置決め及び抜け止めを果たす係合孔を複数箇所に穿設したから、ホルダ部とこれに嵌装される防塵材とを、係合突起と係合孔の係合により位置決め及び抜け止めされた状態で合体させることができ、これにより組み立て時の作業性の大幅な向上を図るとともに、ローディングトレイの出し入れの繰り返しや多少乱暴な取り扱い等に起因する防塵材の脱落を確実に防止することができる等の効果を奏する。

【0020】さらに、防塵材が、トレイ引き出し口に遊嵌する筒状体と、筒状体から延出して前記一部分となるフラップ部とを具備するため、塩化ビニールシートやポリエステルフィルムシート或いはゴムシート等の可撓性シート等から一体成型により形成した防塵材を用い、気密シール部分にフラップ部の可撓性を十分活かした防塵構造を作り出すことができ、ローディングトレイの駆動機構に対する過剰な負担を軽減し、良好な防塵性能を発揮することができる等の効果を奏する。

【図面の簡単な説明】

【図1】本発明の光ディスクドライブ装置の一実施形態を示す要部側面図である。

【図2】図2に示した防塵材部分の分解斜視図である。

【図3】図2に示した防塵材部分の変形例を示す分解斜視図である。

【図4】防塵材の変形例を示す要部分解斜視図である。

【図5】従来の光ディスクドライブ装置の一例を示す斜視図である。

【図6】図5に示した光ディスクドライブ装置の要部側面図である。

【符号の説明】

2 光ディスク

3 ドライブ機構

4 光ピックアップ

5 筐体

5a トレイ引き出し口

11, 21 光ディスクドライブ装置

12 ローディングトレイ

13 前面板

14, 34 防塵材

15, 35 筒状体(ダクト部)

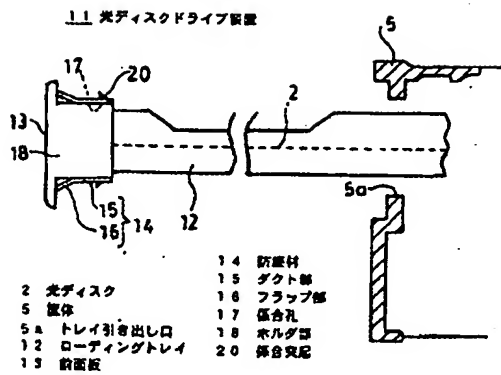
16, 36 フラップ部

17 係合孔

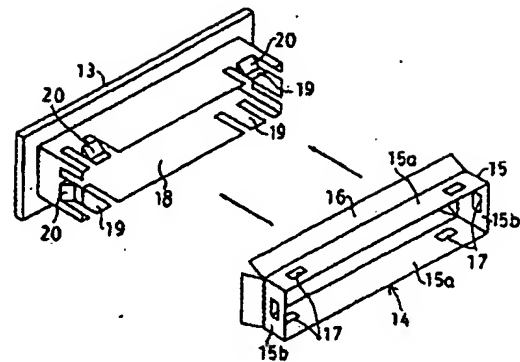
18, 28 ホルダ部

20, 30 係合突起

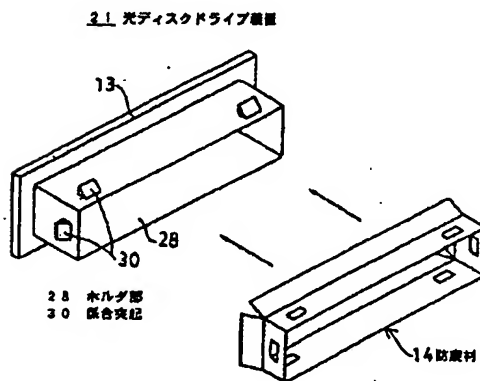
【図1】



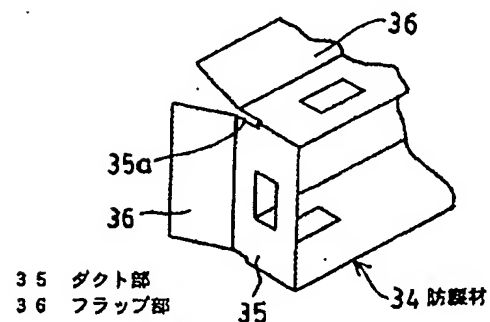
【図2】



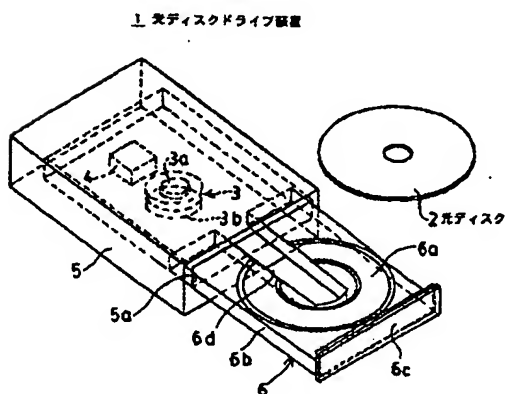
【図3】



【図4】



【図5】



【図6】

